

IN THE CLAIMS

1. (Currently amended) A method of manufacture of a styrene-butadiene latex consisting essentially of:

manufacturing a core latex of styrene-butadiene polymers through emulsion polymerization;

adding monomers and a chain transfer agent to the core latex when a conversion ratio in the manufacturing of the core latex is 55 to 95% to polymerize the monomers on the core latex through emulsion polymerization to prepare shell polymers, wherein a number of shell polymers is at least two; and

adding the chain transfer agent alone when a conversion ratio of an outermost layer is 60 to 95% after completing the preparation of the outermost layer of the shell polymers to select a gel content and a molecular weight of the outermost layer of the latex.

2. (Previously presented) The method of manufacture of a styrene-butadiene latex according to Claim 1, wherein said latex is manufactured through emulsion polymerization of a core composition comprised of styrene, 1,3-butadiene, an ethylenic unsaturated acid monomer, a cyanovinyl monomer, a monomer copolymerizable with said monomers, and the chain transfer agent.

3. (Previously presented) The method of manufacture of a styrene-butadiene latex according to Claim 2, wherein said core composition is comprised of 35 to 90 parts by weight of styrene, 10 to 55 parts by weight of 1,3-butadiene, 1 to 18 parts by weight of the ethylenic unsaturated acid monomer, 0.5 to 15 parts by weight of the cyanovinyl monomer, 1 to 25 parts by weight of the monomer copolymerizable with said monomers, and 0.1 to 1.0 parts by weight of the chain transfer agent.

4. (Previously presented) The method of manufacture of a styrene-butadiene latex according to Claim 1, wherein said shell polymers are manufactured through emulsion polymerization of a shell composition comprised of styrene, 1,3-butadiene, an ethylenic unsaturated acid monomer, a cyanovinyl monomer, a monomer copolymerizable with said monomers, and the chain transfer agent.

5. (Previously presented) The method of manufacture of a styrene-butadiene latex according to Claim 4, wherein said shell composition is comprised of 30 to 80 parts by weight of styrene, 10 to 70 parts by weight of 1,3-butadiene, 0.5 to 18 parts by weight of an ethylenic unsaturated acid monomer, 1.0 to 20 parts by weight of a cyanovinyl monomer, 1.0 to 20 parts by weight of a monomer copolymerizable with said monomers, and 0.1 to 5.0 parts by weight of the chain transfer agent.

6. (Previously presented) The method of manufacture of a styrene-butadiene latex according to Claim 1, wherein said chain transfer agent is a mercaptan having 7 to 16 carbon atoms.

7. (Original) The method of manufacture of a styrene-butadiene latex according to Claim 1, wherein the amount of use of said chain transfer agent is 0.05 to 5.0 parts by weight.

8. (Previously Presented) The method of manufacture of a styrene-butadiene latex according to Claim 2, wherein said ethylenic unsaturated acid monomer is:

one or more kinds of unsaturated carboxylic acids selected from a group of methacrylic acid, acrylic acid, itaconic acid, crotonic acid, fumaric acid, and maleic acid; or

one or more kinds of unsaturated polycarboxylic acid alkyl esters having one or more carboxyl radicals selected from a group of itaconic acid monoethyl ester, fumaric acid monobutyl ester, and maleic acid monobutyl ester.

9. (Previously Presented) The method of manufacture of a styrene-butadiene latex of Claim 2, wherein said cyanovinyl monomer is acrylonitrile or methacrylonitrile.

10. (Previously presented) The method of manufacture of a styrene-butadiene latex according to Claim 2, wherein said monomer copolymerizable with said monomers is one or more compounds selected from the group consisting of:

unsaturated carboxylic acid alkyl esters of methyl acrylate, methyl methacrylate, ethyl acrylate, ethyl methacrylate, butyl acrylate, or butyl methacrylate;

unsaturated carboxylic acid hydroxyalkyl esters of β -hydroxyethyl acrylate, β -hydroxypropyl acrylate, or β -hydroxyethyl methacrylate;

unsaturated carboxylic acid amides of acrylamide, methacrylamide, itaconamide, or maleic acid monoamide, or their derivatives; and

aromatic vinyl monomers of α -methylstyrene, vinyl toluene, or P-methylstyrene.

11. (Original) The method of manufacture of a styrene-butadiene latex according to Claim 1, wherein the gel content of said styrene-butadiene latex manufactured finally is 30 to 90%.

12. (Original) The method of manufacture of a styrene-butadiene latex according to Claim 1, wherein the glass transition temperature of said core latex is -10 to 50°C, and the glass transition temperature of said shell polymers is -20 to 40°C.

13. (Original) The method of manufacture of a styrene-butadiene latex according to Claim 1, wherein the average particle diameter of said core latex is 40 to 90 nm, and the average particle diameter of said styrene-butadiene latex manufactured finally is 130 to 260 nm.

14. (Withdrawn) A styrene-butadiene latex manufactured according to Claim 1.

15. (Withdrawn) A paper coating solution including a styrene-butadiene latex manufactured according to Claim 1.

16. (Withdrawn) Coated paper coated with a paper coating solution including a styrene-butadiene latex manufactured according to Claim 1.

17. (Withdrawn-Previously presented) A styrene-butadiene latex, comprising a structure in which multiple layers of styrene-butadiene polymers are coated onto an outer side of a core latex of said styrene-butadiene polymers as shell polymers.